AMENDMENTS TO THE CLAIMS

1. (Previously Presented)   A computer-implemented method for generating and using a mapping scheme, the method comprising steps of:

receiving commands from a user, wherein said commands establish a mapping between attributes of an XML document and attributes of a relational database;

wherein said attributes of said relational database correspond to columns in tables in said relational database;

based on said commands, automatically generating a mapping scheme that represents said mapping, wherein said mapping scheme includes at least one of:

multiple attributes of said XML document mapped to a single attribute of said relational database; and

multiple attributes of said relational database mapped to a single attribute of said XML document; and

using said mapping scheme to perform a single transformation that moves said XML document directly into said relational database: (a) without materializing said entire XML document separate from said XML document and said relational database during said transformation, and (b) without creating and storing any representation of said entire XML document separate from said XML document and said relational database during said transformation;

wherein using said mapping scheme to perform said single transformation comprises:

determining, based on said mapping scheme, first one or more columns of first one or more tables of said relational database to which a first XML element of said XML document maps;

before processing a second XML element of said XML document, storing said first XML element in said first one or more columns of said first one or more tables of said relational database;

after storing of said first XML element is completed, determining, based on said mapping scheme, second one or more columns of second one or more tables of said relational database to which said second XML element maps; and

storing said second XML element in said second one or more columns of said

second one or more tables of said relational database;

wherein the steps of the method are performed by one or more computing devices.

2-3.   (Canceled)

4.   (Previously Presented)   The method of claim 1, wherein said mapping scheme

further includes instructions on how to collapse a number of attributes of said XML

document into a smaller number of attributes of said relational database.

5.   (Previously Presented)   The method of claim 1, wherein said mapping scheme

further includes instructions on how to expand a number of attributes of said XML

document to a greater number of attributes of said relational database.

6.   (Previously Presented)   The method of claim 1, wherein:

the step of receiving commands from the user includes receiving user input that specifies

a condition, and an action associated with the condition; and

the step of using said mapping scheme to perform said single transformation further

comprises the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database;

during performance of said operation, performing the steps of:

determining whether the condition is satisfied; and

if the condition is satisfied, then performing said action.

7.   (Previously Presented)   The method of claim 1, wherein:

the step of receiving commands from the user includes receiving user input that specifies

a specific set of instructions; and

the step of using said mapping scheme to perform said single transformation further

comprises the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database; and

during performance of said operation, executing the specific set of instructions to

affect said operation.

8.   (Previously Presented)   The method of claim 1, wherein:

the step of receiving commands from the user includes receiving user input that declares

a variable to which values can be assigned; and

the step of using said mapping scheme to perform said single transformation further

comprises the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database; and

during performance of said operation, using said variable.

9.   (Previously Presented)   The method of claim 1, wherein:

the step of receiving commands from the user includes receiving user input that specifies

a precompiled routine; and

the step of using said mapping scheme to perform said single transformation further

comprises the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database; and

during performance of said operation, calling said precompiled routine to affect

said operation.

10.   (Previously Presented)   The method of claim 1, further comprising:

reading source data definition that includes information about said attributes of said XML

document;

reading target data definition that includes information about said attributes of said

relational database; and

based on said source data definition and said target data definition, presenting to said user
an interface that identifies said attributes of said XML document and said
attributes of said relational database;

wherein said step of receiving commands from said user is performed by receiving said
commands through said interface.

11.   (Previously Presented)   The method of claim 1, wherein said mapping scheme
includes instructions on how to collapse a number of hierarchical levels of said XML
document into a smaller number of hierarchical levels of said relational database.

12.   (Previously Presented)   The method of claim 1, wherein said mapping scheme
includes instructions on how to expand a number of hierarchical levels of said XML
document to a greater number of hierarchical levels of said relational database.

13-32. (Canceled)

33.   (Previously Presented)   The method of claim 1, wherein:
a plurality of attributes of said XML document are related to each other according to a
first hierarchy that includes multiple hierarchical levels;
a plurality of attributes of said relational database are related to each other according to a
second hierarchy that includes multiple hierarchical levels; and
said commands establish, in said mapping, that a particular hierarchical level of said
XML document is mapped to a particular hierarchical level of said relational
database, wherein said particular hierarchical level of said XML document is at a
different depth, within said first hierarchy, than the depth of said particular
hierarchal level of said relational database within said second hierarchy.

34.   (Previously Presented)   The method of claim 1, wherein said single transformation
is performed by executing commands defined in a programming language that supports
operations to fetch said XML document directly and store said XML document directly
into said relational database.

35.   (Previously Presented)   The method of claim 1, wherein:

said mapping scheme includes instructions which define that operations included in said

single transformation are grouped to represent a transaction; and

the step of using said mapping scheme to perform said single transformation further

comprises performing said operations in said transaction.

36-40. (Canceled)

41.   (Previously Presented)   The method of claim 1, wherein said first one or more

columns of said first one or more tables of said relational database are the same as said

second one or more columns of said second one or more tables of said relational

database.

42.   (Currently Amended) A <u>non-transitory</u> computer-readable storage medium storing one or

more sequences of instructions which, when executed by one or more processors, cause

the one or more processors to perform steps comprising:

receiving commands from a user, wherein said commands establish a mapping between

attributes of an XML document and attributes of a relational database;

wherein said attributes of said relational database correspond to columns in tables in said

relational database;

based on said commands, automatically generating a mapping scheme that represents said

mapping, wherein said mapping scheme includes at least one of:

multiple attributes of said XML document mapped to a single attribute of said

relational database; and

multiple attributes of said relational database mapped to a single attribute of said

XML document; and

using said mapping scheme to perform a single transformation that moves said XML

document directly into said relational database: (a) without materializing said

entire XML document separate from said XML document and said relational

database during said transformation, and (b) without creating and storing any

representation of said entire XML document separate from said XML document

and said relational database during said transformation;

wherein using said mapping scheme to perform said single transformation comprises:

determining, based on said mapping scheme, first one or more columns of first one or more tables of said relational database to which a first XML element of said XML document maps;

before processing a second XML element of said XML document, storing said first XML element in said first one or more columns of said first one or more tables of said relational database;

after storing of said first XML element is completed, determining, based on said mapping scheme, second one or more columns of second one or more tables of said relational database to which said second XML element maps; and

storing said second XML element in said second one or more columns of said second one or more tables of said relational database.

43.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42, wherein said mapping scheme further includes instructions on how to collapse a number of attributes of said XML document into a smaller number of attributes of said relational database.

44.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42, wherein said mapping scheme further includes instructions on how to expand a number of attributes of said XML document to a greater number of attributes of said relational database.

45.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42, wherein:

the instructions that cause receiving commands from the user include instructions which, when executed by the one or more processors, cause the one or more processors to perform the step of receiving user input that specifies a condition, and an action associated with the condition; and

the instructions that cause using said mapping scheme to perform said single

transformation further comprise instructions which, when executed by the one or

more processors, cause the one or more processors to perform the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database;

during performance of said operation, performing the steps of:

determining whether the condition is satisfied; and

if the condition is satisfied, then performing said action.

46.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein:
 the instructions that cause receiving commands from the user include instructions which,
when executed by the one or more processors, cause the one or more processors
to perform the step of receiving user input that specifies a specific set of
instructions; and
the instructions that cause using said mapping scheme to perform said single
transformation further comprise instructions which, when executed by the one or
more processors, cause the one or more processors to perform the steps of:
performing an operation that includes converting data, based on said mapping
scheme, from said XML document to a format associated with said
relational database; and
during performance of said operation, executing the specific set of instructions to
affect said operation.

47.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein:
the instructions that cause receiving commands from the user include instructions which,
when executed by the one or more processors, cause the one or more processors
to perform the step of receiving user input that declares a variable to which values
can be assigned; and

the instructions that cause using said mapping scheme to perform said single

transformation further comprise instructions which, when executed by the one or

more processors, cause the one or more processors to perform the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database; and

during performance of said operation, using said variable.

48. (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein:

the instructions that cause receiving commands from the user include instructions which,

when executed by the one or more processors, cause the one or more processors

to perform the step of receiving user input that specifies a precompiled routine;

and

the instructions that cause using said mapping scheme to perform said single

transformation further comprise instructions which, when executed by the one or

more processors, cause the one or more processors to perform the steps of:

performing an operation that includes converting data, based on said mapping

scheme, from said XML document to a format associated with said

relational database; and

during performance of said operation, calling said precompiled routine to affect

said operation.

49. (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein the one or more sequence of instructions further comprise instructions which,
when executed by the one or more processors, cause the one or more processors to
perform the steps of:

reading source data definition that includes information about said attributes of said XML

document;

reading target data definition that includes information about said attributes of said

relational database; and

based on said source data definition and said target data definition, presenting to said user
an interface that identifies said attributes of said XML document and said
attributes of said relational database;

wherein the instructions that cause receiving said commands from the user comprise
instructions which, when executed by the one or more processors, cause the one
or more processors to perform the step of receiving said commands through said
interface.

50.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein said mapping scheme includes instructions on how to collapse a number of
hierarchical levels of said XML document into a smaller number of hierarchical levels of
said relational database.

51.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein said mapping scheme includes instructions on how to expand a number of
hierarchical levels of said XML document to a greater number of hierarchical levels of
said relational database.

52.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein:
a plurality of attributes of said XML document are related to each other according to a
first hierarchy that includes multiple hierarchical levels;
a plurality of attributes of said relational database are related to each other according to a
second hierarchy that includes multiple hierarchical levels; and
said commands establish, in said mapping, that a particular hierarchical level of said
XML document is mapped to a particular hierarchical level of said relational
database, wherein said particular hierarchical level of said XML document is at a
different depth, within said first hierarchy, than the depth of said particular
hierarchal level of said relational database within said second hierarchy.

53.   (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42,
wherein said single transformation is performed by executing commands defined in a

programming language that supports operations to fetch said XML document directly and store said XML document directly into said relational database.

54. (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42, wherein:

said mapping scheme includes instructions which define that operations included in said single transformation are grouped to represent a transaction; and

the instructions that cause using said mapping scheme to perform said single transformation further comprise instructions which, when executed by the one or more processors, cause the one or more processors to perform the step of performing said operations in said transaction.

55. (Currently Amended) The <u>non-transitory</u> computer-readable storage medium of claim 42, wherein said first one or more columns of said first one or more tables of said relational database are the same as said second one or more columns of said second one or more tables of said relational database.